

ENTOMOLOGY.—*A study of the North American ants of the genus Xiphomyrmex Forel.*¹ MARION R. SMITH, Bureau of Entomology and Plant Quarantine. (Communicated by C. F. W. MUESEBECK.)

The genus *Xiphomyrmex* Forel, formerly considered as a subgenus of *Tetramorium* Mayr, includes 50 to 75 forms. Species occur in Africa, Madagascar, Indo-Malaya, Australia, and the Sonoran region of North America. According to Wheeler these ants nest in the ground, often forming populous colonies. The following is a translation of Emery's characterization of the genus in *Genera Insectorum*:

Worker.—Anterior border of clypeus feebly emarginate, the lateral border forming an elevated ridge in front of the antennal fossa. Frontal carinae well separated. Antenna 11-segmented. Antennal scrobe well developed. Hairs simple or clavate.

Queen.—Usually larger than the worker, but similar in structure of head, petiole, and hairs. Antenna 11-segmented. Anterior wing with the radial cell usually closed.

Male.—Mandibles toothed. Antenna 10-segmented, the second funicular segment long and composed of the fused segments 2, 3, 4, 5. Wings as in the queen.

This paper deals with four forms of *Xiphomyrmex* known to occur only in the southwestern section of the United States, and Northern Mexico. These four forms are the species *X. spinosus* and its subspecies *insons*, *hispidus*, and *wheeleri*. The typical form was described by Pergande from 14 workers collected at Sierra, San Lazaro, Cape Region, Lower California, and is known only from these specimens. The subspecies *insons* has been recorded from Texas and Arizona (Wheeler), *wheeleri* from Arizona and Mexico (Wheeler), and *hispidus* from Arizona (Wheeler). The worker of *X. spinosus* bears such a striking resemblance to that of *Tetramorium guineense* (F.) that the two could easily be confused except by careful examination. It differs, however, in the number of antennal segments, the number of carinae on the clypeus, the shape of the petiole and postpetiole, the shape of the humeral angles of the prothorax, etc.

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In preparing this article I have been fortunate in being able to study cotypes of all four forms. I wish to express my thanks to the American Museum of Natural History and the Museum of Comparative Zoology for the loan of cotypes, and to Dr. W. S. Creighton for the loan of specimens from his personal collection.

My studies have shown that the subspecies of *spinosus* represent extreme variations, and that there are other forms intermediate between the named forms. The existence of these intermediates might justify the synonymizing of the subspecies with the typical form; but, since many recognized subspecific forms of ants are based on characters of no greater strength than those separating the subspecies of *X. spinosus* from the typical form, I prefer to retain these forms as distinct.

Because Pergande's original description of the species is incomplete I have redescribed *X. spinosus* on the basis of type material in the collection of the United States National Museum. The descriptions of the three subspecies consist only of statements of the characters by which they differ from the typical form. Males and queens of the various subspecies have not been available for study.

The key below should serve to distinguish the workers of the various forms of *spinosus*.

KEY TO THE FORMS OF XIPHOMYRMEX SPINOSUS PERGANDE
(for the identification of the workers)

1. First gastric segment finely punctulate, shagreened, subopaque toward the base.....2
First gastric segment entirely smooth, except for scattered, piligerous punctures.....3
2. Erect hairs on the head and thorax long, slender, and tapering; metasternal angles acute, spine-like.....*spinosus* Pergande
Erect hairs on the head and thorax short, coarse, and blunt; metasternal angles blunt, not spine-shaped.....subsp. *hispidus* Wheeler
3. Metasternal angles acute, spiniform; thorax viewed from above with indistinct mesoepinotal constriction.....subsp. *insons* Wheeler
Metasternal angles blunt, not spine-like; thorax viewed from above with a distinct mesoepinotal constriction.....subsp. *wheeleri* (Forel)

Xiphomyrmex spinosus Pergande

Xiphomyrmex spinosus Pergande, Proc. Calif. Acad. Sci., Vol. 5, p. 894 (1895). *Worker*. Mexico.

Worker.—Length 3.2–3.4 mm.

Head, excluding mandibles, subrectangular, slightly longer than broad, with moderately convex sides, rounded occipital angles, and faintly emarginate posterior border. Eye prominent, oval, convex, placed a little more than its greatest diameter from the base of the mandibles. Mandible triangular, moderately convex dorsally, and with 7 or 8 distinct teeth. Clypeus

convex, posterior border broadly rounded and extending between the frontal carinae, anterior border very faintly emarginate or impressed medianly. Antenna 11-segmented, the scape distinctly compressed, and when lying in the antennal scrobe made on each side of the head by the frontal carina, not reaching the posterior border of the head; funiculus with a distinct 3-segmented club, which is apparently as long as the remainder of the funiculus. Pronotum from above with broadly rounded humeral angles. Mesoepinotal constriction faint. Epinotal spines prominent, straight, and acute, directed backward and gradually divergent; scarcely longer than the dis-

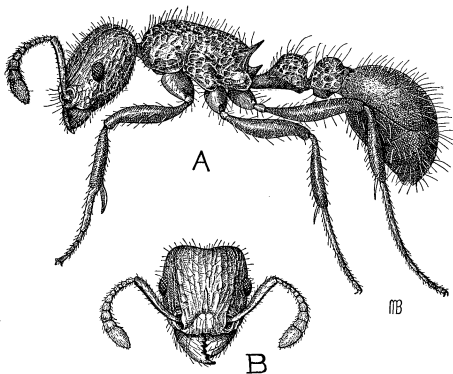


Fig. 1.—*Xiphomyrmex spinosus* Pergande, worker. A, lateral view of body; B, frontal view of head. Illustrations by Mrs. Mary F. Benson.

tance between their bases. Metasternal angles distinct, tooth-like, acute, at least one-half the length of the epinotal spines. Petiole viewed directly from above subcampanulate, postpetiole viewed from the same aspect transversely elliptical. Gaster oval, without pronounced basal angles.

Mandibles with moderately coarse, longitudinal striae. Clypeus with 6 to 8 prominent longitudinal striations, some of which are not complete. Head, thorax, petiole, and postpetiole coarsely rugose-reticulate, the interspaces finely punctulate. The rugae in the center of the head and thorax with a more nearly longitudinal trend than elsewhere. Gaster smooth and shining except for the first segment, the basal half of which is finely punctulate, shagreened, and therefore subopaque.

Hairs rather abundant over all parts of the body; yellowish, erect, but of varying lengths; those on the appendages shorter, and suberect.

Ferruginous; mandibles, clypeus, and legs noticeably lighter.

The above description is based on 7 cotype specimens collected at Sierra, San Lazaro, Cape Region, Lower California, all of which are in the collections of the National Museum.

Xiphomyrmex spinosus subsp. *hispidus* Wheeler

Xiphomyrmex spinosus subsp. *hispidus* Wheeler, Bull. Amer. Mus. Nat. Hist., Vol. 34, p. 415 (1915). *Worker*. Arizona.

Worker.—Length 3.5–3.8 mm.

Posterior border of head very distinctly emarginate. Antennal funiculus not infuscated distally. Metasternal angles blunt, not spineshaped. First segment of the gaster finely punctulate, shagreened and subopaque toward the base. Hairs short, coarse, blunt, and of unequal length.

Description based on 5 cotype specimens labeled "Desert, east of Tucson, Arizona; W. M. Wheeler" (Amer. Mus. Nat. Hist. and Museum of Comp. Zoology).

Wheeler states that he found these ants "nesting in small craters 3 to 4 inches in diameter, in the deserts around Tucson, Arizona (type locality), and from Phoenix in the same state."

Xiphomyrmex spinosus subsp. *insons* Wheeler

Xiphomyrmex spinosus subsp. *insons* Wheeler, Bull. Amer. Mus. Nat. Hist., Vol. 34, p. 416 (1915). *All castes*. Texas, Arizona.

Worker.—Length 3.5–4 mm.

Posterior border of head emarginate but not so strongly as in *wheeleri*. Antennal funiculus not infuscated distally. Mesoeopinotal constriction, viewed from above, very weak, scarcely apparent. Metasternal angles acute, spine-like. Gaster smooth and shining except for scattered piligerous punctures. Hairs long and slender, and of unequal lengths; on the tibiae shorter than in *wheeleri*.

Description based on 3 cotype specimens labeled "Austin, Texas; W. M. Wheeler" (Amer. Mus. Nat. Hist.).

Wheeler cites Austin, Texas, as the type locality, and lists the species from the following other localities:

Texas.—New Braunfels, Alamito in Brewster County, Alice, San Angelo, Fort Davis, Kennedy, Langtry, Barksdale and Del Rio.

Arizona.—Miller Canyon (Huachuca Mts.).

I have referred to this subspecies 3 workers taken from the stomach of an armadillo at Junction, Texas, and submitted by the Bureau of Biological Survey, United States Department of Agriculture.

Wheeler, in remarking on the habits of this species, says, "This ant nests in small craters in dry, grassy places. There are scarcely more than 70 individuals in a colony. The workers are very timid and forage singly. The winged phases appear during the first week in June."

Xiphomyrmex spinosus subsp. *wheeleri* (Forel)

Tetramorium (*Xiphomyrmex*) *wheeleri* Forel, Ann. Soc. Ent. Belg., Vol. 45, p. 128 (1901). *Worker*. Mexico.

Xiphomyrmex spinosus subsp. *wheeleri* (Forel) Wheeler, Bull. Amer. Mus. Nat. Hist., Vol. 34, p. 416 (1915). *Worker*.

Worker.—Length 3.5–3.7 mm.

Posterior border of head faintly emarginate. Antennal club distinctly infuscated. Thorax, viewed from above, with a very distinct mesoepinotal constriction. Metasternal angles blunt, not spine-like. Gaster smooth and shining except for the scattered piligerous punctures. Hairs on the tibiae apparently longer and more reclinate than with *spinosus*.

Description based on 3 cotypes from the type locality, Pacheco, Zacatecas, Mexico; W. M. Wheeler (Amer. Mus. Nat. Hist.).

Wheeler states that he took in the Miller Canyon (Huachuca Mts., Ariz.) specimens of a form closely related to *wheeleri* but differing in the size of the epinotal spine, type of rugosity of postpetiole, and infuscation of the antennal club. I have seen specimens from the Ramsey Canyon of the same mountains which seem to belong to this undescribed form mentioned by Wheeler. These were taken by Dr. W. S. Creighton.

Wheeler apparently collected his type specimens from a small colony beneath a stone in the cactus desert.